

# **Exploring How Prospects Affect Supply Chain Performance in Electronic Supply Chains**

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## **ABSTRACT**

This paper presents a novel research model to examine how prospects interact with relational risk influencing the supply chain performance in electronic supply chains. The model comprises three research hypotheses with three constructs, including prospects, relational risk, and supply chain performance. The constructs are measured by well-supported measures in the literature. The hypotheses are tested via an empirical study of electronic supply chains. Data are collected from 212 manufacturing firms that are among the top 1000 Taiwanese manufacturing firms of 2012 listed by *Business Weekly*. The results of the empirical study suggest that the roles played by prospects, are critical in enhancing supply chain performance in electronic supply chains. The findings of the study provide useful insights into how electronic supply chain members should reinforce their prospects behaviors and activities that would mitigate probable risks and in turn enhance the supply chain performance for the electronic supply chain as a whole.

## **INTRODUCTION**

Supply chain performance has increasingly become key determinants of enhancing competitive advantages in electronic supply chains. For a supply chain as a whole to achieve a competitive advantage, its members must enhance its performance by reinforcing their collaborative behavior and activities. Electronic supply chain management (e-SCM) is defined as the physical implementation of supply chain management process with a support of information technology while also attempting to make a distinction from the concept of supply chain management (Boyson *et al.*, 2003; Ke *et al.*, 2009). Supply chain performance has become strategically important as new types of organizations, such as virtual enterprises, global manufacturing and logistics evolve. During the last few years, the focus has shifted from the factory level management of supply chains to enterprise level management of supply chains (Gunasekaran *et al.* 2005). Supply chain performance can be regarded as an important indicator in the whole electronic supply chain members.

To improve and maintain electronic supply chain performance, it is important to

realize how the factors influence each other and the relationships between factors. Little has examined the inter-relationship between relational governance and risk management that affect supply chain performance and these relationships, despite being an important issue in inter-organizational research. There are vast researches discuss how risk management work in supply chain management. However, it is rare to see studies regard prospect theory as a moderating variable in supply chain performance and it can affect supply chain performance. Prospect theory belongs to behavioral supply chain. In the view of behavioral supply chain to measure reaction of partners in electronic supply chains, prospect theory is a key factor on which should be emphasized. In perspective of supply chain management, this paper presents a novel research model to examine the interrelationships between relational risk and prospect theory.

To verify this novel research model, we conduct an empirical study on manufacturing firms and their partners (such as suppliers and subcontractors) in Taiwan's electronic supply chains. In this paper, we first examine how the relational risks of a company affect its attitude toward supply chain performance with electronic supply chain partners. Then, we examine how prospects affect the interrelationship between relational risks and supply chain performance.

The rest of this paper is organized as follows. Section 2 presents the research model and hypothesis development. Data collection method and research design are described in Section 3, and the study findings are presented in Section 4. Section 5 provides a discussion of results and concludes this paper.

## **THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT**

The research model initiates with prospects and the prospects proceeds on to the relational risk which can also influence the supply chain performance. Hypotheses are represented by letter H and a number.

### **Prospects**

The central idea of prospect theory is that individuals frame their thinking according to their perception of loss and gain; further, they proceed to order their preference differently from expectations of expected utility theory but still proceed to do so rationally (Maria, 2004). In stock markets, investors are affected by prospect theory and investors express different behavior. Before cooperation, managers often have a prospect and the prediction of cooperation performance. Under this presumption, when managers making decisions, different prospects will influence their decisions

and behavior under cooperation. The final outcomes are defined in terms of gains and losses (Scott & Payam, 1996). It is lower possible for managers to cooperate with other firms without rationality. According to Kin & Jessica (2005), when the prospects is positive, the outcome of the supply chain performance will be better than negative domain. It can be believed that when decision makers fall into negative domain, they will make some decisions irrationally in order to break the negative frame. Therefore, it can be hypothesized that:

H1. Prospects are positively related to supply chain performance.

To maintain this kind of positive state, managers could be more careful when choosing a company as a partner. Therefore, supply chain members cooperate with each other because of the prospects negatively influence on relational risks.

H2. Prospects are negatively related to relational risk.

### **Relational risk**

Relational risk refers to that any factors that can harm the relationships in the electronic supply chain members. Relational risk can also be defined as two dimensions: size of loss and probability of loss (Bart et al., 1997). In this paper, there are several risks can be involved in the scope of relational risk. Opportunism is an obvious factor in relational risk. Williamson (1975) defined opportunism as a distrust expression and lack of honesty in cooperative activities. Opportunism is also equal to the term “guile”. Williamson (1985) mentioned that “guile” should be classed as lying, stealing, cheating and calculated efforts to mislead, distort, disguise, obfuscate or otherwise confuse. This paper involves emotion factors into the scope of relational risk. Negative emotion such as anger is damage to relationships in electronic supply chain members. A suggestion is mentioned in the article, anger which belongs to loss emotions will be associated with efforts to decrease the importance and personal relevance of new systems and to limit its use (Anne & Alain, 2010). Kisfalvi(2002) and Kisfalvi & Pitcher (2003) conducted case studies that indicates chief executive officer’s character and emotions can influence the choice of cooperate strategy. Besides, negative emotions can be comparatively important. Since the risk and the supply chain performance is such an intimate relationship, we can produce a cause and effect relationship between relational risk and performance.

As a relational risk, opportunistic behavior is able to destroy supply chain relationships and results in a negative outcome. Dionysis (2006) implicated that if an

exporting organization act opportunistic behavior, it is going to distort the real information and material facts, shirk obligations, fails to honor promises and express no consideration for principle-generates feelings of tension and frustration and agitated anger in the importing firm due to its operations are rotten and undermined. Conflicts can be evolved from negative emotions. Therefore, we can conclude that relational risks such as opportunistic behavior, conflict and negative emotions have a negative impact on supply chain performance. It is thus hypothesized that:

H3. Relational risk is negatively related to supply chain performance.

## **RESEARCH METHOD**

To develop the survey instrument, pools of items are identifies from this literature in order to measure the constructs of this research model. All measures of this survey instrument were developed from the literature. The expressions of these items are adjusted, where appropriate, to the context of supply chains. The items measured on a seven-point Likert scale, ranging from 'strongly disagree' (1) to 'strongly agree' (7).

In order to improve content and appearance of the 12-item questionnaire, a pre-test of it was performed on a sample comprising three academic researchers and four Ph.D. Students. The qualified firms for this study require an considerable experience in e-SCM practice that larger firms would be more likely to have these experiences (Wu and Chang, 2012). Data are collected from 212 manufacturing firms that are among the top 1000 Taiwanese manufacturing firms of 2012 listed by *Business Weekly*. A total response rate is 21.2%. A Chi-square analysis of the industry distribution of the respondents showed no difference from the industry distribution of all the firms used in the survey. This suggested no non-response bias in the returned questionnaires.

## **Research Results**

Structural equation modeling (SEM) with LISREL 8.54 (Jöreskog and Sörbom, 1993) was used to analyze hypothesized relationships of this research model. SEM aims to simultaneously examine the interrelated relationships among a set of posited constructs, each of which is measured by one or more observed items (measures). It involves the analysis of two models: a measurement (or factor analysis) and a structural model. The measurement model specifies relationships between observed measures and their underlying constructs, with constructs allowed to inter-correlate. This structural model specifies posit causal relationships among constructs.

Relationship orientation is positively associates with knowledge sharing, and informal

social ties are positively associated with both relationship orientation and knowledge sharing. Overall fit of this structural model is acceptable, since all measures of fit reach an acceptable level ( $\chi^2 = 106.65$ ,  $df = 101$ ;  $GFI = 0.91$ ;  $AGFI = 0.90$ ;  $CFI = 0.93$ ;  $NFI = 0.92$ ;  $RMSEA = 0.04$ ).

Figure 1 here shows this structural model with coefficient for each path (hypothesized relationship), where a solid line indicates a supported relationship. Prospects (H1:  $\gamma = 0.187$ ,  $t = 2.12$ ,  $p < 0.05$ ; H2:  $\gamma = -0.261$ ,  $t = -3.81$ ,  $p < 0.001$ ) is significantly associated with supply chain performance and relational risk. Relational risk have negative impact on supply chain performance (H3:  $\gamma = -0.411$ ,  $t = -4.62$ ,  $p < 0.001$ ).

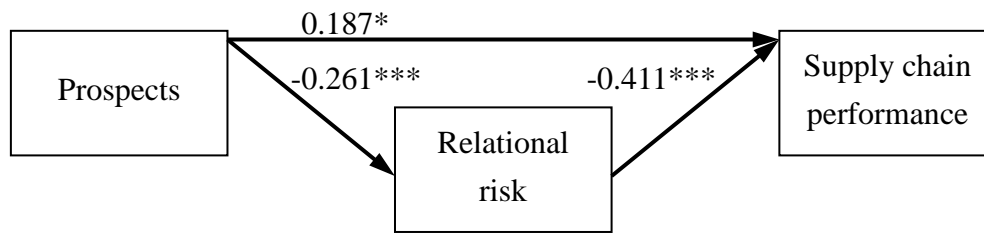


Figure 1. The Structural Model.

\* and \*\*\* denote significance at  $\alpha = 0.05$  and  $0.001$

## DISCUSSION AND CONCLUSIONS

Prospects show evidence of a positive relationship with supply chain performance in Taiwan's electronic supply chains. This is in accordance with the findings of previous studies (Kin & Jessica, 2005). This indicates that when managers keep in a positive domain of prospects, it will be in favor of improving supply chain performance. Since prospects can directly and indirectly influence supply chain performance, it is worthy of emphasizing prospect theory in the scope of supply chain management.

In Taiwan's electronic supply chains, relational risk shows evidence of a negative relationship with supply chain performance. This finding is undoubtedly in line with previous research on the subject. This reflects that relational risk can be a primary destructor in electronic supply chains. In an electronic supply chain, strong relationship can reduce the possibility of any relational risks. Therefore, it is extremely important to emphasize risk management in supply chain management. Combing with previous

findings, under positive domain is possibly to reduce relational risks and maintaining supply chain performance.

With the development of the novel research model, this study makes a theoretical contribution in linking prospects with supply chain performance between electronic supply chain members. The results from our study contribute to the supply chain performance literature. Specifically, although relational risk behaviors are antecedents of supply chain performance, there is still a gap between relational risk behaviors and supply chain performance. We attempted to fill the gaps by involving prospect theory which is in the scope of psychology originally. For instance, this study makes a theoretical contribution in linking prospect theory with relational risk for improving the supply chain performance. The theoretical framework of the model can be applied to other forms of inter-organizational relationships involving supply chain performance.

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